

REMARKS

The Office Action dated January 19, 2007 has been received and carefully noted. The above amendments to the claims, and the following remarks, are submitted as a full and complete response thereto.

Claims 1 and 3-19 are currently pending in the application. Claims 1 and 3-19 have been amended to more particularly point out and distinctly claim the subject matter of the invention. Support for the claim amendments may be found at least in paragraph 0031 of the specification. No new matter has been added. Claims 1 and 3-19 are respectfully submitted for consideration.

The Office Action rejected claims 1, 3, 5, 6, 8, 14, and 16-19 under 35 U.S.C. §102(b) as being anticipated by Okano (U.S. Patent No. 6,449,074). The rejection is respectfully traversed for the following reasons.

Claim 1, upon which claims 3-15 are dependent, recites an optical data transmission system which includes a hub, a kerb location, a converter, an optical router, and a plurality of optical network units. The optical network units are configured to transmit respective data signals to the kerb location, and the optical router is configured to route wavelength channels having predefined wavelength ranges assigned to respective optical network units for transmission to the hub. The converter is configured to convert the data signals into the wavelength channels, and the data signals comprise optical

signals. The conversion is performed without any intermediate conversion to or from an electrical signal.

Claim 16 recites a method of transmitting data. The method includes transmitting, with an optical network unit, respective data signals to a kerb location in an optical data transmission system, routing wavelength channels having predefined wavelength ranges assigned to respective optical network units for transmission to a hub with an optical router, and converting the data signals into the wavelength channels with a converter. The converting is performed without any intermediate conversion to or from an electrical signal, and the data signals are optical signals.

Claim 17 recites an optical router for an optical data transmission system. The optical data transmission system includes a hub, a kerb location, and a plurality of optical network units. The optical network units are configured to transmit respective data signals to the kerb location, the optical router is configured to route wavelength channels having predefined wavelength ranges assigned to respective optical network units for transmission to the hub, and the optical router includes a converter to convert the data signals into the wavelength channels. The conversion is performed without any intermediate conversion to or from an electrical signal, and the data signals are optical signals.

Claim 18 recites a converter for an optical data transmission system. The optical data transmission system includes a hub, a kerb location, an optical router, and a plurality of optical network units. The optical network units are configured to transmit respective

data signals to the kerb location, the converter is configured to convert the data signals into wavelength channels having predefined wavelength ranges assigned to respective optical network units, and the optical router is configured to route the wavelength channels for transmission to the hub. The conversion is performed without any intermediate conversion to or from an electrical signal, and the data signals are optical signals.

Claim 19 recites an optical data transmission system. The optical data transmission system includes transmitting means for transmitting, with an optical network unit, respective optical signals to a kerb location, routing means for routing wavelength channels having predefined wavelength ranges assigned to respective optical network units for transmission to a hub with an optical router, and converting means for converting the optical signals into the wavelength channels with a converter. The converting is performed without any intermediate conversion to or from an electrical signal.

As will be discussed below, Okano fails to disclose or suggest all of the elements of the claims, and therefore fails to provide the features discussed above.

Okano discloses an optical transmission device which includes an optical multiplexer for wavelength division multiplexing (WDM) a plurality of optical signals to generate wavelength division multiplexing signal light and outputting the wavelength division multiplexing signal light to an optical transmission line. The device also includes a detecting unit for detecting a break of each optical signal according to the

power of each optical signal, and a compensator for adding light having a predetermined wavelength to the wavelength division multiplexing signal light when at least one of the optical signals is cut off. Thus, Okano is directed to a point-to-point solution.

Applicants respectfully submit that Okano fails to disclose or suggest all of the elements of the present claims. For example, Okano does not disclose or suggest that the conversion is “performed without any intermediate conversion to or from an electrical signal,” as recited in claims 1 and 16-19. As mentioned above, Okano provides a point-to-point solution. The present invention, on the other hand, provides a multipoint-to-point solution. In a point-to-point connection, according to Okano, the signals already reside in one “place” at the beginning of the process. Whereas, according to the claimed invention, the signals are only optically brought together in the kerb location and are not separated into electrical signals prior to the hub. In other words, according to the present invention, conversion from an optical network unit signal into a wavelength division multiplexer can be made in a fully optical manner. The signal arrives to kerb in optical form and the power for the conversion is put in through optical pumping. As a result, the kerb location does not require an electrical power source, but rather all connections are through the optical fiber only. Okano, however, fails to disclose or suggest that the conversion is “performed without any intermediate conversion to or from an electrical signal.”

Furthermore, Okano does not disclose or suggest an optical router “configured to route wavelength channels having predefined wavelength ranges assigned to respective

optical network units for transmission to the hub,” as recited in claim 1 and similarly recited in claims 16-19. The Office Action took the position that the optical multiplexer 14 illustrated in Figure 1 of Okano corresponds to the optical router of the claimed invention (Office Action, page 3). However, according to Okano, the optical multiplexer 14 is “for wavelength division multiplexing the optical signals from the wavelength converters 12 (#1 to #n) to generate WDM signal light. The WDM signal light from the optical multiplexer 14 is output to the optical fiber transmission line 6” (Okano, Column 4, lines 15-19 and Figure 1).

Okano fails to disclose or suggest that the optical multiplexer is configured to route wavelength channels having predefined wavelength ranges assigned to respective optical network units for transmission to the hub. In particular, Okano does not mention that the optical multiplexer routes wavelength channels having predefined wavelength ranges or that they are transmitted to a hub. In fact, Okano discloses that the signal from the optical multiplexer is output to the transmission line 6 which is connected to a second terminal station 4, which is not a hub. Additionally, the Office Action acknowledges, as will be discussed below, that Okano fails to disclose a hub. Therefore, Applicants respectfully submit Okano fails to disclose or suggest an optical router “configured to route wavelength channels having predefined wavelength ranges assigned to respective optical network units for transmission to the hub,” as recited in the present claims.

Claims 3-15 are dependent upon claim 1. As such, claims 3-15 should be allowed for at least their dependence upon claim 1, and for the specific limitations recited therein.

Claims 1, 3-6, 8 and 13-19 were rejected under 35 U.S.C. §103(a) as being unpatentable over Okano. The Office Action took the position that Okano discloses all of the elements of the claims, with the exception of the hub. However, the Examiner then asserts that the terminal station of Okano corresponds to the hub, because it receives optical signals and forwards them to the correct port (Office Action, page 9, line 19 – page 10, line 3). The rejection is respectfully traversed for the following reasons.

As discussed above, Applicants respectfully submit that Okano fails to disclose or suggest that the conversion is “performed without any intermediate conversion to or from an electrical signal,” as recited in claims 1 and 16-19. Additionally, Applicants respectfully assert that it would not have been obvious, to a person of skill in the art at the time the invention was made, to modify Okano to yield this element of the claims. As such, Okano does not render claims 1, 3-6, 8 and 13-19 as obvious since Okano does not disclose or suggest performing the conversion without any intermediate conversion to or from an electrical signal.

Okano also does not disclose or suggest the optical router of the claimed invention. Applicants respectfully assert that it would not have been obvious to a person of skill in the art to modify Okano to yield the optical router of the present claims. Furthermore, contrary to what is asserted in the Office Action, the second terminal station of Okano does not correspond to the hub of the claimed invention. The Office Action states that a hub “is just a common connection point for devices in a network, and it enables signals to go from one device (or segment) to another, or forwards the packet to

the correct port” (Office Action, page 9, line 19 – page 20, line 1). Applicants respectfully submit that the second terminal station of Okano does not even fulfill the Office Action’s definition of a hub.

According to Okano, “the second terminal station 4 has a transponder 18 for separating the WDM signal light transmitted by the optical fiber transmission line 6 into individual optical signals (original optical signals) having arbitrary wavelengths, and a plurality of optical receivers (OR) 20 (#1 to #n) for receiving these optical signals, respectively. The transponder 18 includes an optical demultiplexer 22 for separating the input WDM signal light into a plurality of optical signals having wavelengths λ_1 to λ_n , and a plurality of wavelength converters 24 (#1 to #n) for wavelength converting these optical signals into optical signals having arbitrary wavelengths” (Okano, Column 4, lines 26-36). The second terminal station is not a common connection point for devices in the network, nor does the second terminal station enable signals to go from one device to another (see Okano, Figure 1). Therefore, Okano does not disclose or suggest all of the elements of claims 1 and 16-19 and, therefore, does not render the claimed invention as obvious.

Claims 3-15 are dependent upon claim 1. As such, claims 3-15 should be allowed for at least their dependence upon claim 1, and for the specific limitations recited therein.

Claims 7 and 9-12 were rejected under 35 U.S.C. §103(a) as being unpatentable over Okano in view of Kim (“A Low-Cost WDM Source with ASE Injected Fabry-Perot

Semiconductor Laser”, IEEE Photonics Technology Letters, Vol. 12, No. 8, August 2000, p. 1067-1069).

Okano is discussed above. Kim discloses a wavelength division multiplexing source employing an uncooled and unisolated Fabry-Perot semiconductor laser diode. The output of the laser diode is locked to the externally injected narrow-band amplified spontaneous emission.

Applicants note that claims 7 and 9-12 are dependent upon claim 1, and inherit all of the limitations thereof. As discussed above, Okano does not disclose or suggest all of the elements of claim 1. In addition, Kim does not cure the deficiencies in Okano, as Kim also does not appear to disclose the optical router of the present invention. Thus, the combination of Okano and Kim does not disclose or suggest all of the limitations of claims 7 and 9-12. Furthermore, claims 7 and 9-12 should be allowed for at least their dependence upon claim 1, and for the specific limitations recited therein.

Applicants respectfully submit that Okano and Kim, whether considered alone or in combination, fail to disclose or suggest all of the elements of the claimed invention. These distinctions are more than sufficient to render the claimed invention unanticipated and unobvious. It is therefore respectfully requested that all of claims 1 and 3-19 be allowed, and this application passed to issue.

If for any reason the Examiner determines that the application is not now in condition for allowance, it is respectfully requested that the Examiner contact, by

telephone, the applicants' undersigned attorney at the indicated telephone number to arrange for an interview to expedite the disposition of this application.

In the event this paper is not being timely filed, the applicants respectfully petition for an appropriate extension of time. Any fees for such an extension together with any additional fees may be charged to Counsel's Deposit Account 50-2222.

Respectfully submitted,



Majid S. AlBassam
Registration No. 54,749

Customer No. 32294
SQUIRE, SANDERS & DEMPSEY LLP
14TH Floor
8000 Towers Crescent Drive
Tysons Corner, Virginia 22182-2700
Telephone: 703-720-7800
Fax: 703-720-7802

MSA:jf